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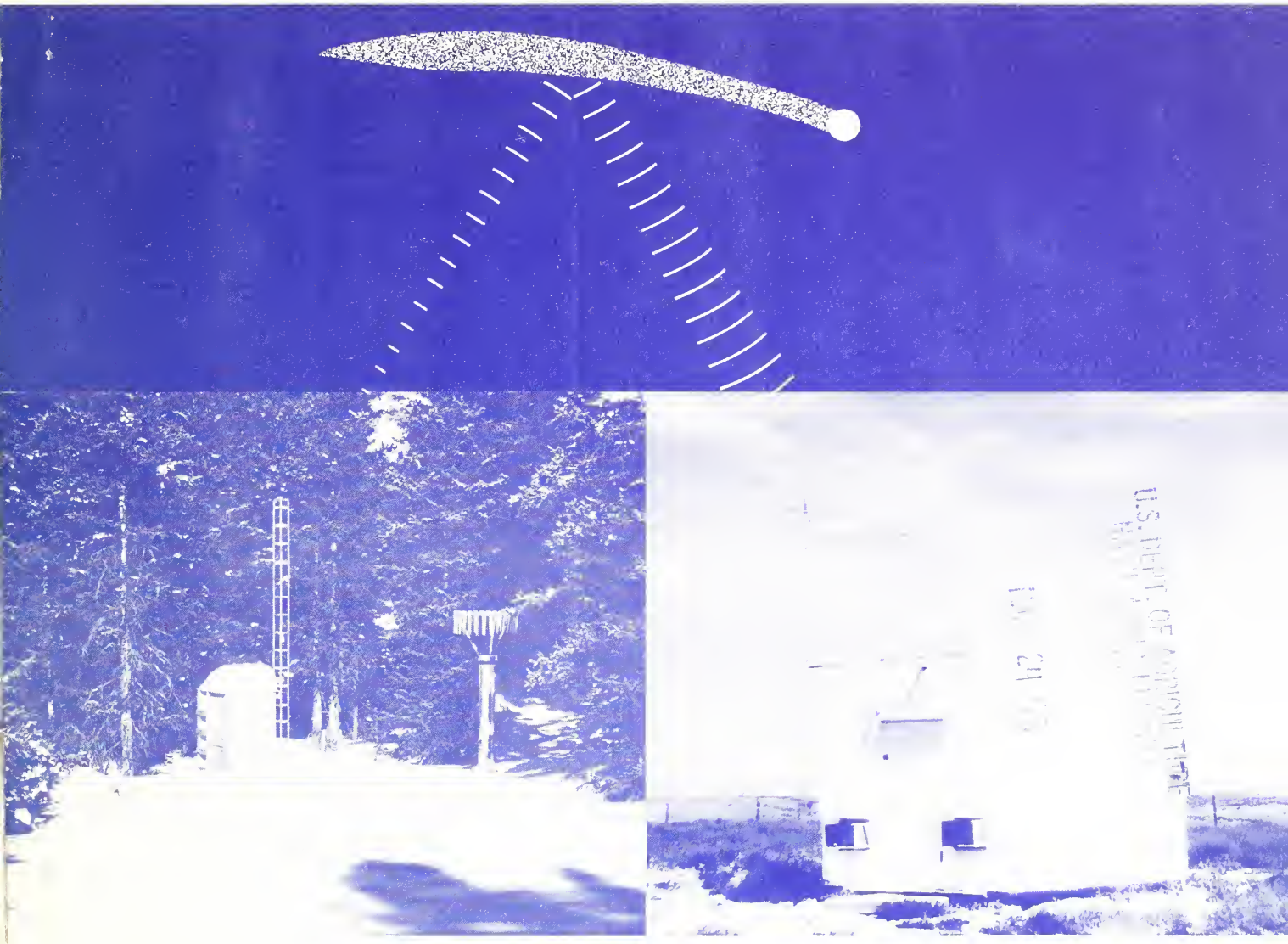
WATER SUPPLY OUTLOOK FOR WESTERN UNITED STATES

Including Columbia River Drainage in Canada



U.S. DEPARTMENT OF AGRICULTURE

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with
CALIFORNIA DEPARTMENT of WATER RESOURCES
and
BRITISH COLUMBIA DEPARTMENT of
LANDS, FORESTS and WATER RESOURCES

AS OF
MAR. 1, 1978

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: SOME OF THE DATA IN THIS REPORT HAVE BEEN RECEIVED THROUGH THE SOIL CONSERVATION SERVICE'S NEW SNOTEL SYSTEM WHICH TRANSMITS INFORMATION VIA THE SPACE AGED METEOR BURST METHOD FROM DATA SITES TO MASTER STATIONS LIKE THESE.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P.O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1220 S.W. Third Ave., Portland, Oregon 97204
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 --- for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 --- for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 --- and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.

USDA-SCS-PORTLAND, OR 1977

WATER SUPPLY OUTLOOK FOR WESTERN UNITED STATES

Including Columbia River Drainage in Canada

ISSUED

MARCH 1, 1978

The Soil Conservation Service coordinates snow surveys conducted by its staff and many cooperators, including the Bureau of Reclamation, Corps of Engineers, Forest Service, National Park Service, NOAA, National Weather Service, Geological Survey, and other Federal Agencies, Departments of State Government, Irrigation Districts, Power Companies, and others.

The Department of Water Resources coordinates snow surveys in California.

The Water Resources Service, Department of Lands, Forests, and Water Resources directs snow surveys in British Columbia.

This report was prepared by the Water Supply Forecasting Unit, Engineering Division, Soil Conservation Service, from data supplied by Snow Survey Supervisors of the Soil Conservation Service in the States of Alaska, Arizona, Colorado and New Mexico, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

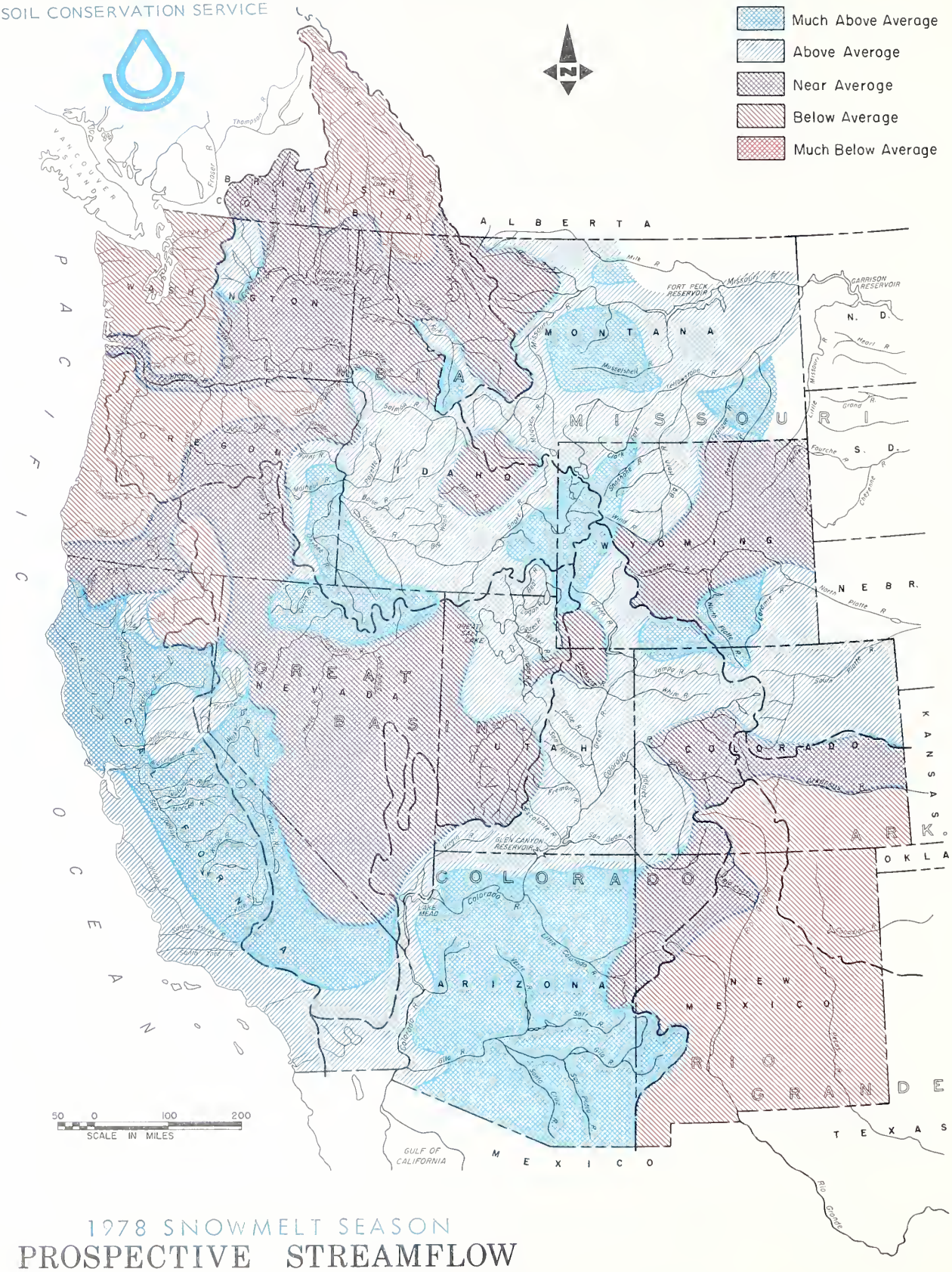
Data from California was supplied by the Chief, Water Supply Forecast and Snow Survey Unit, Department of Water Resources.

Data from British Columbia was supplied by the Chief, Hydrology Division, Water Investigations Branch, Department of Lands, Forests and Water Resources.

USDA-SCS-PORTLAND, OR 1977 M7-L-22030B

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
R. M. DAVIS, ADMINISTRATOR

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



1978 SNOWMELT SEASON

PROSPECTIVE STREAMFLOW

AS OF MARCH 1, 1978

WATER SUPPLY OUTLOOK

1978 SNOWMELT SEASON

MARCH 1, 1978

ADEQUATE TO EXCELLENT WATER SUPPLIES ARE FORECAST FOR A LARGE PORTION OF THE WEST. SOME AREAS, HOWEVER, CONTINUE TO HAVE BELOW NORMAL SNOWPACK ACCUMULATIONS, AND SUBNORMAL SUPPLIES ARE FORECAST. MANY RESERVOIRS ARE BEGINNING TO STORE WATER TO REPLACE THE RESERVES WHICH WERE DEPLETED LAST SUMMER.

A continuing series of heavy storms has raked California, Nevada, and Arizona in the past month. As a result, the water supply outlook continues excellent in California, and has changed drastically in Arizona. Most of the states' rivers have raised to flood stage and reservoirs are filling rapidly. One month ago Arizona had a poor snowpack, poor reservoir storage, and was expecting much below normal water supplies. As of March 1 the outlook for water in the desert southwest is excellent, with a heavy snowpack and rapidly filling reservoirs.

This storm pattern has not continued eastward with sufficient strength to alleviate the poor snowpack conditions on the Rio Grande river watershed. Forecasts of snowmelt runoff in New Mexico were revised upward slightly as of March 1, but still indicate that flow of the Rio Grande will be 85 percent of normal.

In the Columbia river basin there is a significant portion of the region with a below normal snowpack. Dry February weather in British Columbia has caused forecasts of the mainstem to be revised downward to 88 percent of average. However, contributions from tributary watersheds improve the water supply outlook in the United States portion of the basin, and the Columbia is expected to flow at about 103 percent of its 15 year average.

The western slopes of the Cascade range in Washington and Oregon continue to be deficient in snow, due to warm December rains and below normal snowfall since that time. Snowmelt runoff is forecast to be less than normal from the area.

The Missouri and Platte river watersheds have generally excellent snowpacks and most rivers and streams are expected to yield above normal quantities.

The pattern of below normal snowpack on the Rio Grande headwaters extends eastward to some Sangre de Cristo range tributaries of the Arkansas River. Runoff is forecast to be below normal and reservoir storage in major impoundments on the Arkansas River is very poor.

Nearly all of California's watersheds have received above normal rain and snowfall. Many reservoirs are filling, but statewide the storage has not quite reached the normal March 1 level. Prospects for adequate water supplies in California next summer are nearly assured.

Reservoir storage has improved markedly in California and Arizona. Elsewhere in the west little water was added to most reservoirs during February. However, with most streamflow forecasts indicating normal to above average snowmelt yield, the reservoir storage reserves should improve considerably with the onset of warmer spring weather. The only exception is in the Arkansas basin where storage is quite low and streamflow is not expected to exceed seasonal demands.

A state-by-state summary of snowpack and water supply outlook conditions follows:

ALASKA

Snow cover in Alaska is extremely variable throughout the state. Portions of the Brooks range and Kenai Peninsula have snow cover about 150 percent of average. However, local areas within the same regions have but 60 to 70 percent of a normal March 1 snowpack. Other regions have similar variations, just not as extreme.

In general, the interior Alaska snowpack is near average down to 70 percent of normal, the Copper drainage about 5 to 10 percent below average, the Susitna drainage 10 to 30 percent below, the Cook Inlet - Kenai Peninsula region is near normal to 130 percent of average, and southeastern Alaska as much as 30 percent below average.

Ship Creek is expected to discharge a near average quantity of snowmelt runoff, while the Chena and Salcha rivers are forecast to yield 75 and 85 percent of normal, respectively.

ARIZONA

Normal water supplies are now assured in

SUMMARY OF SNOW WATER EQUIVALENT MEASUREMENTS MARCH 1, 1978

MAJOR BASIN AND SUB — WATERSHED	WATER EQUIVALENT IN PERCENT OF: LAST YEAR	AVERAGE
MISSOURI BASIN		
Jefferson	340	122
Madison	342	128
Gallatin	237	124
Missouri Main Stem	241	125
Yellowstone	238	128
Shoshone	340	157
Wind	589	143
North Platte	275	133
South Platte	270	102
ARKANSAS BASIN		
Arkansas	298	128
Cucharas - Purgatoire	89	75
RIO GRANDE BASIN		
Rio Grande (Colo.)	312	80
Rio Grande (New Mexico)	156	103
Pecos	77	103
COLORADO BASIN		
Green (Wyo.)	283	143
Yampa - White	339	140
Duchesne	515	123
Price	483	130
Upper Colorado	337	141
Gunnison	371	129
San Juan	274	98
Dolores	472	132
Virgin	1,136	180
Gila	243	110
Salt	209	87
Verde	283	167
GREAT BASIN		
Bear	532	135
Logan	442	126
Ogden	643	143
Weber	347	113
Provo - Utah Lake	449	136
Jordan	312	118
Sevier	383	135
Walker - Carson	595	147
Tahoe - Truckee	476	134
Humboldt	597	128
Lake Co. (Oregon)	640	100
Harney Basin (Oregon)	545	125
Owens	796	199
UPPER COLUMBIA BASIN		
Columbia (Canada)	146	86
Kootenai	289	93
Clark Fork	300	112
Bitterroot	320	120
Flathead	224	104
Spokane	286	93
Okanogan	449	113
Methow	1,733	114
Chelan	418	122
Wenatchee	599	106

MAJOR BASIN AND SUB — WATERSHED	WATER EQUIVALENT IN PERCENT OF: LAST YEAR	AVERAGE
SNAKE BASIN		
Snake above Jackson, Wyo.	434	130
Snake above Hiese, Idaho	440	137
Henry's Fork	363	120
Southern Idaho Tributaries	416	116
Big and Little Wood	981	118
Boise	765	122
Owyhee	610	140
Payette	628	121
Malheur	885	115
Weiser	610	108
Burnt	600	110
Powder	515	100
Salmon	690	112
Grande Ronde	420	100
Clearwater	279	92
LOWER COLUMBIA BASIN		
Yakima	969	106
Umatilla	430	75
John Day	470	105
Deschutes - Crooked	530	70
Hood	390	80
Willamette	315	50
Lewis	810	67
Cowlitz	1,220	86
PACIFIC COASTAL BASIN		
Puget Sound	636	70
Olympic Peninsula	590	62
Umpqua - Rogue	385	75
Klamath	680	95
Trinity	588	147
CALIFORNIA CENTRAL VALLEY		
Upper Sacramento	853	128
Feather	556	139
Yuba	536	134
American	512	128
Mokelumne	625	129
Stanislaus	845	169
Tuolumne	850	170
Merced	800	160
San Joaquin	855	171
Kings	930	186
Kaweah	1,053	158
Tule	935	187
Kern	824	206

Data for California Watersheds supplied by Dept. of Water Resources, and for British Columbia Watersheds by Dept. of Lands, Forests and Water Resources.

Average is for 1958-72 period. California averages are for the period 1931-70. Based on Selected Snow Courses determined by Distribution within the Basin. Length of Record and Repetitive Monthly Measurement Schedules.

most areas in Arizona, as a result of the heavy storms which began about the first of January, and continued through the March 1 snow survey period. Most reservoirs are full or filling, and streamflow is forecast to be well above normal.

The heavy storms have not resulted in a heavy snowpack. The warm temperatures accompanying these storms have caused much of the precipitation to be in the form of rain. What little snow there was below 7000 feet prior to the last storm has melted. Above 7000 feet, however, snow cover has increased considerably.

Snow cover varies from 87 percent of average on the Little Colorado Watershed to 167 percent on the Verde, with conditions on the Gila and Salt Watersheds 110 and 123 percent of average respectively.

Major flooding occurred about March 1 throughout Arizona. Conditions were just right for maximum runoff. Watershed soils were saturated, precipitation was very heavy, and equally important, precipitation was in the form of rain up to 7000 feet. Since about 55 percent of most Arizona watersheds lie between 5000 and 7000 feet and this is the area that gets the heaviest precipitation, the temperature is the determining factor in producing peak flows. The seasonal March-May runoff is expected to be very much above average.

The state's watersheds are completely saturated, and water yields will be very high if other heavy warm storms occur in the next few weeks.

The heavy runoff has filled to operating capacity all reservoirs except Roosevelt, San Carlos and Lyman Reservoir. Roosevelt now contains 70 percent of capacity and is filling rapidly.

CALIFORNIA

The California Department of Water Resources, coordinating agency for snow surveys and water supply forecasting in California, reports that above normal precipitation occurred over most of the state during February, continuing the wet pattern that began in mid-December. Spring and summer snowmelt runoff will be above normal and all major reservoirs are expected to fill.

Forecasts of snowmelt runoff for the April through July period range from about average for the Pit River to 200 percent of average for the Kern River. Snowmelt runoff will be generally from 120 to 130 percent of average in Sacramento Valley streams. In the San Joaquin Valley all streams, from the Tuolumne River south, will have over 150 percent of average flows.

Snowpack measurements show that all watersheds in the state have accumulated above average amounts of snow-stored water, except for the Pit River Basin where snow water content is 95 percent of the March 1 average. In all other river basins the snow water storage has already exceeded average total seasonal accumulation, which usually does not occur until about April 1. North Coast and Sacramento Valley watersheds have 115 percent of the seasonal total, and San Joaquin Valley tributaries have an impressive 155 percent of the average seasonal total. The potential exists for high snowmelt runoff in San Joaquin Valley streams if a period of sustained warm weather occurs during the peak snowmelt period.

Precipitation during February was slightly below normal in northeastern California, well above normal on the Sacramento Valley floor and in the Central Sierra, and much above normal in the San Joaquin Valley and southern California. February storm patterns, favoring central and southern California, produced rainfall in excess of 400 percent of normal amounts in portions of the southern San Joaquin Valley and local flooding, accompanied by mud slides, plagued south coastal areas.

Runoff during February was above average throughout the state except for the Lahontan area. February runoff was 115 percent of average in the Sacramento Valley, 160 percent in San Joaquin Valley tributaries, and exceeded 250 percent of average in the central and south coastal areas. As a result, total water year runoff to date has now reached normal to well above normal volumes throughout the state, except for the Lahontan area.

Reservoir storage on March 1 has increased 6.3 million acre feet in the Central Valley since March 1 of last year and is now 95 percent of average. Only the 14 reservoirs monitored on the North Coast and in the Lahontan area have much below average storage. Lower Colorado River reservoirs are now at 110 percent of their 10-year average storage.

COLORADO

Prospects for good summer streamflow continue to improve in Colorado. March 1 snow surveys show a continuing above normal trend in the northern portion of the state which was established early in the year. Snow in the Steamboat Springs area is excellent. One snow course near Buffalo Pass is at a near record depth and is expected to exceed the record before this

SELECTED STREAMFLOW FORECASTS MARCH 1, 1978

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's
	Flow In (1,000 A.F.)	Percent of Average		Flow In (1,000 A.F.)
SASKATCHEWAN				
St. Mary near Babb, Montana 1/	487	99	April-Sept.	
UPPER MISSOURI				
Beaverhead near Grant, Montana 2/	145	100	April-Sept.	54
Big Hole near Melrose, Montana	880	118	April-Sept.	
Madison near Grayling, Montana 3/	575	120	April-Sept.	313
Gallatin near Gateway, Montana	650	122	April-Sept.	
Sun at Gibson Dam, Montana 4/	610	103	April-Sept.	205
Belt near Monarch, Montana	172	140	April-Sept.	
Marias near Shelby, Montana 5/	600	107	April-Sept.	56
Missouri near Landusky, Montana 6/	5,550	117	April-Sept.	
near Williston, North Dakota 7/	15,100	128	April-Sept.	
S.Fk. Musselshell above Martinsdale, Montana	75	150	April-Sept.	
Milk at Eastern Crossing, Montana	330	115	March-Sept.	
Yellowstone at Yellowstone Lake Outlet, Wyo.	1,000	122	April-Sept.	387
at Corwin Springs, Montana	2,490	125	April-Sept.	1,129
at Miles City, Montana 8/	8,000	125	April-Sept.	
Clarks Fork Near Belfry, Montana	780	129	April-Sept.	
Shoshone below Buffalo Bill Res., Wyoming 9/	1,100	133	April-Sept.	381
Wind near Dubois, Wyoming	153	150	April-Sept.	42
at Riverton, Wyoming 10/	840	127	April-Sept.	292
below Boysen Res., Wyoming 11/	1,110	110	April-Sept.	479
Bull Lake Creek near Lenore, Wyoming	181	99	April-Sept.	105
Little Popo Agie near Lander, Wyoming	42	88	April-Sept.	20
Tensleep near Tensleep, Wyoming	77	97	April-Sept.	
Medicine Lodge near Hyattville, Wyoming	23	110	April-Sept.	
Shell Creek near Shell, Wyoming	90	123	April-Sept.	55
Big Horn near St. Xavier, Montana 8/	2,300	124	April-Sept.	618
Tongue near Dayton, Wyoming	120	106	April-Sept.	107
No. Fork Powder near Hazelton, Wyoming	10.5	105	April-Sept.	10
PLATTE				
North Platte at Northgate, Colorado	320	133	April-Sept.	63
Encampment near Encampment, Wyoming	178	126	April-Sept.	55
Deer Creek at Glenrock, Wyoming	19.5	75	April-Sept.	30
Laramie Riv. & Pioneer Canal, nr Woods, Wyo.12/	152	120	April-Sept.	67
Big Thompson at Drake, Colorado 13/	130	121	April-Sept.	
Clear at Golden, Colorado 14/	160	127	April-Sept.	
St. Vrain at Lyons, Colorado 15/	75	127	April-Sept.	
Cache LaPoudre near Fort Collins, Colorado 16/	310	126	April-Sept.	
ARKANSAS				
Arkansas at Salida, Colorado 17/	338	108	April-Sept.	
Cucharas near LaVeta, Colorado	7	70	April-Sept.	
Purgatoire at Trinidad, Colorado	30	79	April-Sept.	
RIO GRANDE				
Rio Grande near Del Norte, Colorado 18/	350	75	April-Sept.	
at Otowi Bridge, New Mexico 19/	425	81	March-July	
Conejos near Mogote, Colorado 20/	155	84	April-Sept.	
El Vado Res., Inflow, New Mexico	185	97	March-July	
Pecos at Pecos, New Mexico	35	85	March-July	
UPPER COLORADO				
Colorado, Grandby Res. Inflow, Colorado 21/	290	127	April-Sept.	
near Dotsero, Colorado 22/	1,800	126	April-Sept.	
near Cameo, Colorado 23/	2,900	122	April-Sept.	
near Cisco, Utah 24/	3,450	122	April-July	535
Lake Powell Inflow, Arizona 25/	8,182	119	April-July	1,130
Roaring Fork at Glenwood Springs, Colorado 26/	740	104	April-Sept.	
Uncompahgre at Colona, Colorado	165	123	April-Sept.	

Forecasts in California provided by Department of Water Resources.
Average is for 1958-72 period except California. California is computed for 1921-70 period.
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.
Explanatory Notes on Forecasts listed on Inside Back Cover.

SELECTED STREAMFLOW FORECASTS MARCH 1, 1978

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
UPPER COLORADO (continued)				
Gunnison, Blue Mesa Res. Inflow, Colorado 27/	800	101	April-Sept.	
near Grand Junction, Colorado 28/	1,200	101	April-Sept.	
Dolores at Dolores, Colorado	267	115	April-Sept.	
Green at Warren Bridge, Wyoming	420	128	April-Sept.	165
at Green River, Wyoming 29/	1,340	135	April-July	279
Flaming Gorge Res. Inflow, Utah 27/	1,450	124	April-July	233
at Green River, Utah 30/	3,400	120	April-Sept.	883
Big Sandy near Big Sandy, Wyoming	65	114	April-Sept.	26
Yampa at Steamboat Springs, Colorado	360	131	April-Sept.	
near Maybell, Colorado	1,200	133	April-Sept.	
Little Snake near Dixon, Wyoming	390	130	April-Sept.	55
White near Meeker, Colorado	370	125	April-July	
Strawberry at Duchesne, Utah 40/	70	125	April-July	10.1
Duchesne near Tabiona, Utah 31/	105	101	April-July	19.2
at Randlett, Utah 40/	300	112	April-July	13.1
Lakefork below Moon Lake, Utah 32/	67	97	April-July	30
Uinta near Neola, Utah	85	97	April-July	70
Whiterocks near Whiterocks, Utah	55	95	April-July	24
Price, Scofield Res. Inflow, Utah 33/	48	141	April-July	42
Cottonwood near Orangeville, Utah 34/	51	111	April-July	10.4
San Juan, Navajo Res. Inflow, New Mexico 27/	600	101	April-July	
near Bluff, Utah 35/	930	109	April-July	123
Animas at Durango, Colorado	475	112	April-Sept.	
LOWER COLORADO				
Virgin near Virgin, Utah	52	108	April-June	25
Little Colorado above Lyman, Arizona	10	102	March-June	1.6
Gila near Solomon, Arizona	215	238	March-May	16.8
Frisco at Clifton, Arizona	120	256	March-May	8.6
Salt at Intake, Arizona	800	356	March-May	70
Tonto above Roosevelt, Arizona	200	866	March-May	5.5
Verde above Horseshoe Dam, Arizona	700	612	March-May	38
GREAT BASIN				
Bear at Utah-Wyo. State Line	113	101	April-July	41
at Harer, Idaho	330	111	April-Sept.	35
Smith's Fork near Border, Wyoming	150	130	April-Sept.	27
Thomas Fork near Wyo.-Ida. State Line	42	130	April-Sept.	3.8
Logan near Logan, Utah 36/	129	114	April-July	34
Ogden, Pine View Res. Inflow, Utah 27/	132	120	April-June	13.5
Weber near Oakley, Utah	114	114	April-June	32
Provo near Hailstone, Utah 37/	110	108	April-July	32
Strawberry Res. Inflow, Utah	60	133	April-July	5.7
Utah Lake Net Inflow, Utah	242	116	April-July	
Big Cottonwood near Salt Lake City, Utah	41	113	April-July	18.8
Beaver near Beaver, Utah	21	107	April-July	6.1
Sevier near Hatch, Utah	40	100	April-July	10.6
near Gunnison, Utah	40	105	April-July	15.4
So. Fork Humboldt near Elko, Nevada	72	109	April-July	
Humboldt at Palisades, Nevada	200	104	April-July	65
Truckee at Farad, California 38/	340	127	April-July	51
East Carson near Gardnerville, Nevada	265	146	April-July	43
West Carson at Woodsfords, California	75	144	April-July	12
East Walker near Bridgeport, California 39/	120	176	April-August	9
West Walker near Coleville, California	220	152	April-July	35
Donner and Blitzen near Frenchglen, Oregon	55	104	April-Sept.	
Silvies near Burns, Oregon	74	100	April-Sept.	12.3
Chewaucan near Paisley, Oregon	87	100	March-July	12.3
Deep above Adel, Oregon	66	85	March-July	
Bidwell near Ft. Bidwell, California	11.3	98	April-July	
Owens below Long Valley Res., California	124	150	April-Sept.	28

Forecasts in California provided by Department of Water Resources.
Average is for 1958-72 period except California. California is computed for 1921-70 period.
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.
Explanatory Notes on Forecasts listed on Inside Back Cover.

SELECTED STREAMFLOW FORECASTS MARCH 1, 1978

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
UPPER COLUMBIA				
Columbia at Birchbank, British Columbia 40/ a.	40,700	88	April-Sept.	31,583
at Grand Coulee, Washington 40/ a.	64,600	94	April-Sept.	41,805
below Rock Island, Washington a.	71,600	95	April-Sept.	43,659
Kootenai below Libby Dam near Libby, Montana	6,600	89	April-Sept.	3,976
at Leonia, Idaho	8,150	90	April-Sept.	4,910
Blackfoot near Bonner, Montana	1,070	104	April-Sept.	
So.Fk. Flathead nr Columbia Falls, Montana 40/	2,470	104	April-Sept.	1,255
Flathead at Columbia Falls, Montana 40/	6,470	101	April-Sept.	3,180
near Polson, Montana 40/	7,800	102	April-Sept.	3,600
Clark Fork above Missoula, Montana	1,940	106	April-Sept.	573
near Plains, Montana 40/ a.	4,490	111	April-Sept.	5,237
at Whitehorse Rapids, Idaho a.	14,400	102	April-Sept.	
Bitterroot near Darby, Montana	800	137	April-Sept.	242
Priest near Priest River, Idaho 41/ a.	870	99	April-July	
Pend Oreille below Box Canyon, Washington a.	16,200	102	April-Sept.	6,041
Kettle near Laurier, Washington	1,970	105	April-Sept.	1,145
Spokane at Post Falls, Idaho 42/	3,000	100	April-Sept.	1,066
Similkameen near Nighthawk, Washington a.	1,580	104	April-Sept.	645
Okanogan near Tonasket, Washington a.	1,750	102	April-Sept.	708
Methow near Pateros, Washington a.	1,140	111	April-Sept.	
Stehekin at Stehekin, Washington	1,010	112	April-Sept.	494
Chelan at Chelan, Washington 43/	1,450	116	April-Sept.	599
Wenatchee at Peshastin, Washington	1,960	110	April-Sept.	839
SNAKE				
Snake above Palisades Res., Wyoming 44/	3,540	135	April-Sept.	1,037
near Hiese, Idaho 45/	5,250	133	April-Sept.	1,494
near Blackfoot, Idaho 46/	5,400	129	April-July	
at Weiser, Idaho a.	7,630	117	April-Sept.	
Grey's above Palisade, Wyoming	550	142	April-Sept.	90
Salt above Palisade, Wyoming	505	138	April-Sept.	121
Henry's Fork near Ashton, Idaho 47/	755	112	April-Sept.	
Teton near St. Anthony, Idaho	515	116	April-Sept.	
Big Lost near MacKay, Idaho 48/	180	98	April-Sept.	
Little Lost near Howe, Idaho	39	95	April-Sept.	
Portneuf at Topaz, Idaho	115	124	March-Sept.	
Oakley Res. Inflow, Idaho	32	107	March-Sept.	
Salmon Falls Creek near San Jacinto, Idaho	93	111	March-Sept.	
Little Wood above High 5 Crks, Idaho	105	112	April-Sept.	
Big Wood, Inflow at Magic Res., Idaho 49/	345	115	April-Sept.	
Bruneau near Hot Springs, Idaho	255	113	March-Sept.	
Boise near Boise, Idaho 50/	2,020	125	April-Sept.	
Owyhee near Owyhee, Nevada 51/	83	122	April-Sept.	
Owyhee Res. Net Inflow, Oregon 27/	465	140	April-Sept.	97
Malheur near Drewsey, Oregon	78	108	April-Sept.	
Payette near Horseshoe Bend, Idaho 52/	2,260	122	April-Sept.	
Weiser above Crane Creek, Idaho 40/	560	110	March-Sept.	
Burnt near Hereford, Oregon 40/	37	110	April-Sept.	
Powder near Sumpter, Oregon	62	111	April-Sept.	
Eagle above Skull Creek, Oregon	184	97	April-Sept.	
Imnaha at Imnaha, Oregon	326	106	April-Sept.	
Salmon at Whitebird, Idaho a.	8,200	118	April-Sept.	
Lostine near Lostine, Oregon	124	99	April-Sept.	
Grande Ronde at LaGrande, Oregon	140	89	April-Sept.	88
Clearwater at Spalding, Idaho a.	8,730	101	April-Sept.	
LOWER COLUMBIA				
Yakima at CleElum, Washington 53/	860	89	April-Sept.	
near Parker, Washington 54/	2,115	98	April-Sept.	802
Naches near Naches, Washington 55/	880	99	April-Sept.	

Forecasts in California provided by Department of Water Resources.
Average is for 1958-72 period except California. California is computed for 1921-70 period.
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.
Explanatory Notes on Forecasts listed on Inside Back Cover.

a. National Weather Service Forecast

SELECTED STREAMFLOW FORECASTS MARCH 1, 1978

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
LOWER COLUMBIA (Continued)				
Walla Walla, So. Fork near Milton, Oregon	59	90	April-Sept.	
Umatilla at Pendleton, Oregon	105	73	April-Sept.	
John Day, Middle Fork at Ritter, Oregon	106	90	April-Sept.	
North Fork at Monument, Oregon	486	90	April-Sept.	
Crooked near Post, Oregon	91	100	April-Sept.	
Deschutes at Benham Falls, Oregon 40/	465	85	April-Sept.	
Columbia at The Dalles, Oregon 40/ a.	103,000	98	April-Sept.	54,130
at The Dalles, Oregon 40/ a.	88,400	98	April-July	42,939
at The Dalles, Oregon 40/ a.	71,700	98	April-June	35,577
McKenzie near Vida, Oregon	947	75	April-Sept.	
Santiam, South, at Waterloo, Oregon	436	70	April-Sept.	
North, at Mehama, Oregon 40/	611	70	April-Sept.	
Clackamas at Estacada, Oregon	624	79	April-Sept.	
Willamette at Salem, Oregon 40/	3,707	75	April-Sept.	
Lewis at Ariel, Washington 57/	1,080	82	April-Sept.	1,040
Cowlitz at Castle Rock, Washington 57/	2,450	88	April-Sept.	2,172
NORTH PACIFIC COASTAL				
Dungeness near Sequim, Washington	135	82	April-Sept.	
Umpqua, No., near Toketee Falls, Oregon 40/ a.	144	87	April-Sept.	
Rogue at Raygold, Oregon	747	84	April-Sept.	529
Klamath Lake, Net Inflow, Oregon	482	90	April-Sept.	290
Trinity at Lewiston, California	900	146	April-July	113
CALIFORNIA CENTRAL VALLEY 40/				
Sacramento, Inflow to Shasta, California	2,000	113	April-July	798
Feather near Oroville, California	2,520	135	April-July	397
Yuba at Smartville, California	1,300	120	April-July	198
American, Inflow to Folsom Res., California	1,650	125	April-July	233
Cosumnes at Michigan Bar, California	170	120	April-July	13
Mokelumne, Inflow to Pardee Res., California	615	132	April-July	106
Stanislaus, Inflow to Melones Res., California	1,000	139	April-July	120
Tuolumne, Inflow to Don Pedro Res., California	1,750	146	April-July	275
Merced, Inflow to Excheque Res., California	955	157	April-July	128
San Joaquin, Inflow to Millerton Lake, Calif.	2,070	174	April-July	262
Kings, Inflow to Pine Flat Res., California	1,945	167	April-July	274
Kaweah, Inflow to Terminus Res., California	435	161	April-July	62
Tule, Inflow to Success Res., California	95	161	April-July	5
Kern, Inflow to Isabella Res., California	850	202	April-July	91
ALASKA				
Yukon at Eagle, Alaska	-	-	April-July	
at Ruby, Alaska	-	-	April-July	
Porcupine near Fort Yukon, Alaska	-	-	April-July	
Salcha near Salchaket, Alaska	620	86	April-July	552
Little Chena near Fairbanks, Alaska	73	77	April-July	83
Chena at Fairbanks, Alaska	420	75	April-July	493
Ship Creek near Anchorage, Alaska	59	103	April-July	94
So.Fk.Campbell at Canyon Mouth nr Anchorage, AK	13.4	104	April-July	19.9

a. National Weather Service forecast

Forecasts in California provided by Department of Water Resources.
Average is for 1958-72 period except California. California is computed for 1921-70 period.
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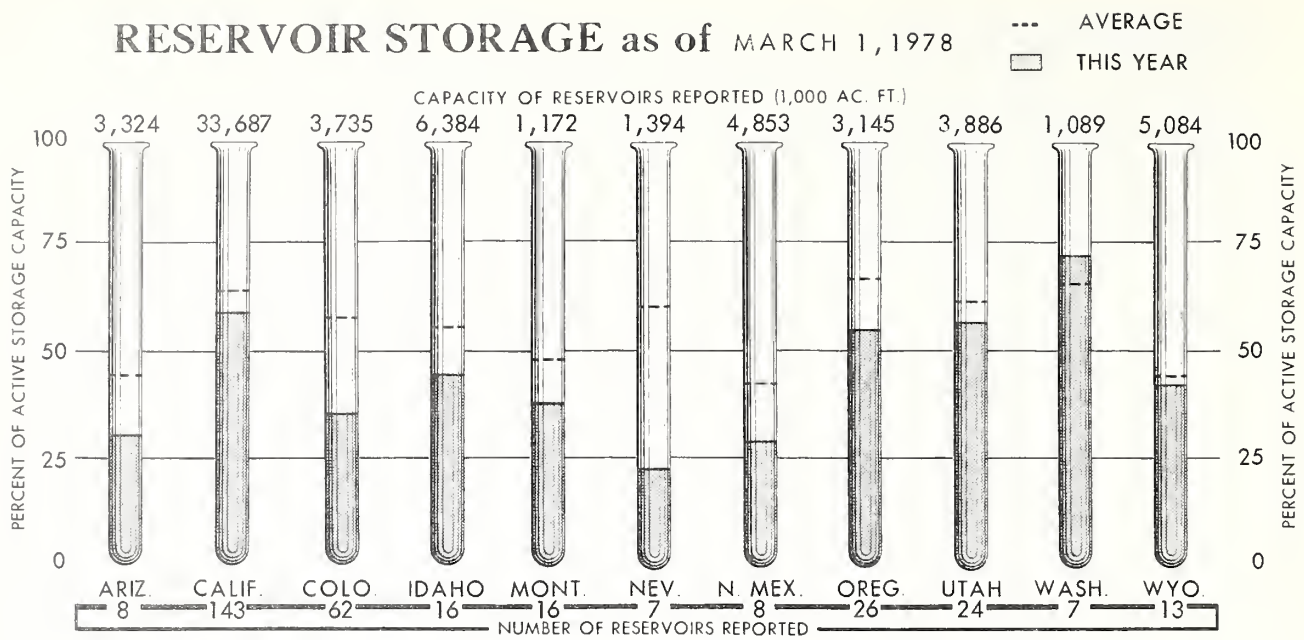

winter is over. Streams in the Steamboat Springs area should produce adequate water supplies this summer, as should most streams in the northern third of the state, including the headwaters of the Colorado, Yampa, North Platte, and White.

The middle of the state has near normal snow and should produce near average streamflow this summer. The Gunnison River at Grand Junction is forecast at 800,000 acre feet or 101 percent of normal. This is typical of the streams in the middle third of the state. The Arkansas River on the eastern slope should also flow near normal. Reservoir storage is extremely poor in this basin and soil moisture conditions are reported as fair. Additional snow is needed to insure adequate water this summer.

The lower third of the state has relatively poor snow. The Purgatory and the Rio Grande have less than normal snow and unless March and April are big snow months, summer streamflow will be deficient.

The Animas and La Plata Basins are exceptions in the southern part of the state. Here the snowpack is as much as 120 percent of normal and should produce a good streamflow.

Reservoir storage was depleted statewide last year due to the severe water shortage. It is hoped that some of these reservoirs can store water this summer.

Soil moisture conditions are reported as fair to poor statewide. Considerably more snow is needed below the elevation of 9,000 feet to prime the mid and low elevation portions of the watersheds.

IDAHO

The water supply outlook for 1978 is good to excellent in Idaho. Seasonal forecasts for the April through September period range from 90 percent of average for the Kootenai River to 169 percent of normal for Montpelier Creek near Montpelier.

In general, snowfall during February was near to well above normal. Snowpack accumulation near March 1 varied from a low of 92 percent of normal on the Clearwater River watershed to a high of 154 percent of average on the Malad River drainage in southeastern Idaho. The exception is the Palouse drainage in the northern part of the state with only 56 percent of normal snowpack.

Reservoir storage has improved greatly during the fall and winter months after the record low carryover of October 1977. Many reservoirs are now in flood control operation. Storage at the beginning of the irrigation season is expected to be good to excellent.

Soil moisture is good to excellent at low and middle elevations and near normal under the snowpack at higher elevations. Mild temperatures continued in February, and precipitation was above normal over most of the state.

MONTANA

Most of the states water users can expect normal to above average water supplies, if late winter and spring storms provide near average precipitation.

STORAGE IN LARGE RESERVOIRS MARCH 1, 1978

BASIN AND NAME OF RESERVOIR	CAPACITY (1,000 A.F.)	STORAGE (1,000 A.F.)	STORAGE PERCENT AVERAGE
UPPER MISSOURI			
Belle Fourche	185	86	85
Boysen	550	299	114
Buffalo Bill	373	148	98
Canyon Ferry	2,043	1,490	93
Fort Peck	19,140	14,000	107
Garrison	24,790	14,896	106
Hebgen	377	377	120
Keyhole	192	103	137
Lake Francis Case	5,816	3,406	93
Lake Sharpe	1,900	1,753	103
Oahe	23,630	17,211	111
Tiber	1,347	519	90
Bighorn Lake	1,356	821	102
PLATTE			
So. Platte in CO (30)	1,067	582	75
City of Denver (7)	622	307	66
Colo-Big Thompson (3)	718	160	38
Glendo	784	386	106
Pathfinder	1,016	429	112
Seminoe	1,010	304	91
ARKANSAS			
Conchas	273	108	58
John Martin	354	4	4
Turquoise	130	47	-
Pueblo	354	2	-
RIO GRANDE			
Elephant Butte	2,195	230	52
New Mexico Res. (4)	578	61	55
UPPER COLORADO			
Blue Mesa	830	235	67
Flaming Gorge	3,749	1,987	126
Navajo	1,696	935	78
Powell	25,002	14,555	174
Starvation	152	128	-
LOWER COLORADO			
Havasu	619	556	103
Mead	26,159	21,169	123
Mohave	1,810	1,647	98
Salt River Res. (4)	1,755	702	63
San Carlos	949	56	29
Verde River Res. (2)	318	213	147
GREAT BASIN			
Bear	1,421	786	82
Lahontan	291	114	56
Rye Patch	157	49	52
Sevier Bridge	236	82	82
Strawberry	274	144	124
Tahoe	732	69	16
Utah	884	676	112
Willard Bay	193	127	105

BASIN AND NAME OF RESERVOIR	CAPACITY (1,000 A.F.)	STORAGE (1,000 A.F.)	STORAGE PERCENT AVERAGE
UPPER COLUMBIA			
Chelan	676	195	83
Couer d'Alene	225	134	83
Duncan	1,400	-0.6	0
Flathead	1,791	681	67
Hungry Horse	3,428	1,641	70
Kootenay	787	329	77
Lake Koocanusa	5,694	1,591	-
Lower Arrow	2,691	850	244
Noxon Rapids	335	262	87
Pend Oreille	1,155	144	31
Roosevelt	5,232	2,027	71
Upper Arrow	4,400	1,167	165
LOWER COLUMBIA			
Cougar	155	41	98
Detroit	300	79	72
Green Peter	270	70	64
Hills Creek	200	66	-
Lookout Point	337	85	142
Prineville	153	106	94
Wickiup	200	170	101
Yakima Res. (5)	1,066	776	112
SNAKE			
American Falls	1,700	1,190	151
Anderson Ranch	423	80	33
Arrow Rock	287	168	68
Brownlee	980	475	92
Cascade	653	283	87
Dworshak	2,016	528	151
Jackson	847	333	62
Lucky Peak	278	70	78
Owyhee	715	310	69
Palisades	1,200	295	36
Warm Springs	191	41	42
PACIFIC COASTAL			
Clair Engle	2,448	1,006	51
Clear Lake	440	176	78
Nacimiento	350	259	142
Ross	1,053	801	92
Upper Klamath	584	399	94
CALIFORNIA CENTRAL VALLEY			
Almanor	1,308	676	91
Berryessa	1,602	1,210	81
Bullards Bar	961	581	125
Folsom	1,010	647	111
Isabella	570	129	75
McClure	1,026	341	59
Millerton	521	461	137
Oroville	3,538	2,525	103
Pine Flat	1,002	508	85
Shasta	4,552	3,614	112

Reservoir Storage Data Provided by Bureau of Reclamation , Corps of Engineers, Geological Survey. and water using organizations. Data from California and British Columbia provided by Department of Water Resources and Department of Lands, Forests and Water Resources, respectively.

The snow pack is generally near or above average on all mountain watersheds. Drainages in the southwestern part of the state showed considerable improvement during February. Surveys conducted about March 1 show two areas with below average snowpack; one near Libby and the other near Red Lodge. Cooperators report an abnormally heavy snowpack in most eastern prairie areas.

Heavy mountain snowpacks are found in the upper reaches of the Bitterroot, Bighole, Madison and Yellowstone River drainages.

Soil moisture is near normal at higher elevations of most of the state, but below average in the northwestern and south central mountain ranges.

April through September streamflow is forecast to be average or above for most stream systems. The Kootenai River and Red Lodge Creek are predicted to have below average runoff. Near average runoff is expected from the Clark Fork, Blackfoot and Flathead Rivers west of the divide; Beaverhead, Deerborn, Sun, Teton, and Marias Rivers east of the divide; and the St. Mary's River that flows into Hudson Bay.

Well above average flows are forecast for the Bitterroot and streams draining small mountain ranges in central Montana.

Reservoir storage is generally near average on Missouri basin streams, but remains below normal in the Columbia drainage.

NEVADA

Continued above normal snowfall across most of Nevada is improving the state's water supply outlook. If the weather during the remainder of the winter and spring is near normal, summer water supplies should be excellent.

March 1 snow surveys indicate above average snowpacks in all parts of the state. The East slope of the Sierra's has a snowpack ranging from 130 percent on the Tahoe Basin to 155 percent on the Walker Basin. The March 1 surveys show that the snowpack has exceeded the normal April 1 accumulated water contents.

Other basins in the state have above average snowpacks. The Mt. Charleston area in southern Nevada has the largest snowpack since 1969. Storms crossing the southern part of the state have accumulated snowpacks averaging 225 percent. The Humboldt, Owyhee, and Snake Basins' snowpacks are 120 percent.

The streamflow forecasts for the April 1 to July 31 period are far above average. Lake Tahoe is predicted to rise 1.85 feet from April 1 to its high point, assuming the gates were closed.

The Truckee River at Farad is forecast to yield 127 percent of its average, and the Carson River near Carson City is forecast to flow 155 percent of average. The West Walker River near Coleville, California, is forecast to flow at a rate of 152 percent of average.

The water supply outlook in the eastern part of the state is a bit more modest, but is still above average. The Humboldt River at Palisades is forecast at 104 percent. Tributaries to the Humboldt have forecasts ranging from 120 to 140 percent.

Reservoir storage in the major reservoirs affecting irrigation use is still very low. The seven major reservoirs: Wildhorse, Rye Patch, Boca, Lahontan, Topaz, Bridgeport and Tahoe have only 36 percent of the usual storage for March 1.

Reservoirs in the Truckee and Carson rivers have only 26 percent of average storage.

NEW MEXICO

Snows during the latter portion of February improved the mountain snowpack significantly from last month. Most watersheds now contain snowpack near average. This situation should produce spring and summer runoff close to normal on all small streams. The exception is the Rio Grande mainstem which will likely flow only 85 percent of normal due to a deficient snowpack in its Colorado headwaters. Many small streams have begun their spring runoff.

Snow course measurements as of about March 1 continue to indicate that the pack on the Rio Grande headwaters is well below the 15 year normal. However, most tributary watersheds have snowpacks in the range of 80 to 120 percent of average.

Snowmelt runoff is now expected to be near the 15-year average from most Rio Grande tributary streams. The exceptions are the upper mainstem and Pecos which are both forecast to yield 85 percent of average.

Reservoir storage remains very poor, being only 58 percent of the normal March 1 quantity.

OREGON

Most Oregon water users will experience adequate water supplies this coming spring and summer. Water users dependent on direct diversion in the Willamette Valley, and in the counties along the Columbia River, may experience water shortages in July and August.

The Cascade snowpack continues to be poor in the northern half and below average in the southern half of the range. Warm rains and a high freezing level during December depleted the snow cover at that time and it has not recovered. These warm rains also melted the December snow cover in the Blue Mountains. Snow cover is best in southeastern Oregon; where in Harney and Malheur counties, it varies from 120 to 165 percent of normal. Elsewhere, in the John Day, Crooked, Burnt, Powder and Wallowa drainages, the snowpack is near normal. Snowpack is below average in the Umatilla and Walla Walla watersheds.

Precipitation for the November-February winter period has been normal, or above normal, in all areas of the state with eastern Oregon receiving the above normal amounts. Mountain soil moisture is good from the above average precipitation received this winter. This condition will enhance the runoff.

Reservoir storage remains below average but should supply adequate water this summer. Current impoundments are 83 percent of normal and 55 percent of capacity.

Streamflow forecasts range from a high of 140 percent of normal from the Owyhee to 75 percent of average from the Willamette. Most other rivers in the state are expected to discharge from 85 to 105 percent of their 15 year averages.

UTAH

Utah's 1978 water supply outlook ranges from below average for some water users in Uintah and Sevier Basins to near average for the rest of the state.

Heavy February storms increased the snow water content statewide at a faster than normal rate. Basin snow cover now ranges from 96 percent of the March 1 average on the Oquirrh Mountains above Tooele to 185 percent on the mountains of southwestern Utah between Enterprise and the Santa Clara River. The Uinta Mountains improved, but are still only 5 to 20 percent above the March 1 average and need much more to give them an adequate water supply this year.

The Upper Sevier, Virgin, Provo, Salt Lake front, and Ogden watersheds gained more than normal snowpack during February.

However, the Bear River and Weber River watersheds did not receive normal increases in snow water content. The Upper Bear is now 139 percent of average, the Lower Bear is 134 percent, and the Weber 113 percent of the March 1 average.

February precipitation at mountain stations ranged from half average to average on the Lower Bear to better than twice average at stations in southwestern and northeastern Utah mountains.

Soil moisture was improved at lower elevations by warm February rain, but most higher elevations still have a soil profile which is below average below the top 12 to 24 inches.

Reservoir storage totals 91 percent of the March 1 average, but 20 percent less than last year at 24 of Utah's key irrigation reservoirs. Reservoirs significantly below average are those on the Sevier, Beaver, Uintah Basin, and Price River, and they are not expected to fill this season.

Streamflow forecasts for the April-July period improved 15 to 30 percent in southern Utah and as much as 5 to 20 percent in the northern part of the state. Some forecasts in northern Utah on the Weber, Bear and Ogden rivers stayed about the same as on February 1. Uintah Basin forecasts raised 10 to 15 percent and flows are now expected to be near average. Colorado River forecasts dropped 3 to 7 percent since February 1 due to less than normal snow accumulation on upstream watersheds in Colorado.

Most water users in Utah are expected to have adequate water supplies this season except those depending only on storage water that is well below average after last year's heavy use and low flows. Areas which may be affected by short reservoir supplies are the Sevier, Lower Beaver, and Uintah Basin.

Recent heavy precipitation and warmer than average temperatures have caused flooding on Shoal Creek, Santa Clara River, and other tributaries of the Virgin River. Some cropland has been flooded by out of bank flows on these streams.

WASHINGTON

The water supply for the coming water use season should be adequate for most needs over the state. Exceptions to this could possibly be in the Olympic Peninsula and the Green, Cedar and Snoqualmie watersheds on the west side of the Cascades, but

reservoir storage is adequate to supplement the snowmelt runoff, and problems are not anticipated.

March 1 snow survey results indicate very little change in the last month. Some watersheds now have a higher than normal snowpack while others show the opposite.

In the Upper Columbia River Basin in Washington snow cover ranges from 91 percent of normal on the Spokane River to a high of 127 percent of average on the Entiat. The lower Columbia Drinage has a snowpack that ranges from 67 percent of normal on the Lewis and Mill Creek Drainages to 98 percent of average on the Klickitat. On the Puget Sound Drainage from the Cascades, the snowpack ranges from near average on the Skagit down to a low of 22 percent on the Cedar.

Major reservoirs in the state are now in pretty good shape. The five Yakima irrigation reservoirs had 112 percent of average storage on March 1. Power reservoirs should all fill with the spring runoff.

Forecasts of streamflow for the forthcoming irrigation and water use season now range from a low of 71 percent of normal for the April-July period on the Elwha River near Port Angeles to a high of 117 percent of normal from the Chelan and Entiat Rivers. In most areas the water supply will be near normal in the state of Washington during 1978.

WYOMING

Wyoming water supplies are expected to be average to excellent this spring and summer. Well above average snowpacks are reported in spite of lack of normal snowfall in some areas last month. The outlook for relief from last year's drought conditions appears very promising.

The rate of increase of the mountain snowpack during February has slowed somewhat compared to the early part of the season before February 1. The percent of average figures for March 1 are generally 10 percent below February 1 percentages.

Near normal conditions still prevail in the northeastern and southwestern mountain ranges. Southeastern and northwestern areas still boast 30-40 percent above normal March 1 accumulations. The Little Popo Agie drainage is lowest, having only 88 percent of its 15 year average.

Lower elevation precipitation during February ranged from twice the normal monthly increments in northern Wyoming to near or slightly below in the southern part of the state. Seasonal totals (since October 1, 1977) are 150-200 percent of normal in the northern half to slightly below normal in southern Wyoming.

If normal amounts of precipitation are received during the spring months, the state's water users should expect average to excellent spring and summer streamflow volumes. Deer Creek is the exception which is forecast at 75 percent of normal. Forecasts over the state range from near average in the Powder, Tongue, Bighorn, Wind, and Lower Green river basins to 120-130 percent of normal in the North Platte, Snake, Shoshone and Upper Green river basins.

Reservoir storage remains below normal in the Snake and Belle Fourche drainages. Jackson Lake has 62 percent and Palisades 36 percent of their March 1 normals. Bighorn, Wind, and North Platte rivers storage is near to slightly above normal.

EXPLANATION of STREAMFLOW FORECASTS

All flows are observed flows except as adjusted for: 1/ Storage change in Lake Sherburne. 2/ Storage change in Lima and Clark Canyon reservoirs. 3/ Storage change in Hebgen Lake. 4/ Storage change in Gibson Reservoir and measured diversions. 5/ Storage change in Two Medicine, Four Horns, Lake Francis and Swift reservoirs. 6/ Storage change in Canyon Ferry and Tiber reservoirs. 7/ Changes as indicated in (6/), (8/), plus storage change in Fort Peck. 8/ Storage change in Boysen, Buffalo Bill, Bull Lake and Yellowtail reservoirs. 9/Storage change in Buffalo Bill Reservoir plus Heart Mountain diversion. 10/ Storage change in Pilot Butte and Bull Lake reservoirs plus Wyoming canal diversion.

11/ Changes indicated in (10/) plus storage change in Boysen Reservoir. 12/ Plus diversions to Cache LaPoudre. 13/ Plus by-pass to power plants. 14/ Minus diversion thru Gumlick Tunnel. 15/ Storage change in Price Reservoir. 16/ Minus diversions from North Platte, Laramie and Colorado rivers plus measured diversions above station. 17/ Storage change in Clear Creek, Twin Lakes and Turquoise reservoirs minus diversions from Colorado River. 18/ Storage change in Rio Grande, Santa Maria and Continental reservoirs. 19/ Storage change in El Vado and Abiquiu reservoirs. 20/ Storage change in Platoro Reservoir.

21/ Storage change in Grandby Reservoir as furnished by U.S.B.R. plus diversions by Adams Tunnel and Grand River Ditch. 22/ Changes as indicated in (21/) plus diversions thru Roberts, Gumlick and Moffat tunnels and storage change in Dillon, Homestake, Williams Fork, Green Mountain and Willow Creek reservoirs. 23/ Changes indicated in (22/) and (26/). 24/ Storage change in Blue Mesa Reservoir. 25/ Changes indicated in (24/), (30/) and (35/) and storage change in Lake Powell. 26/ Diversions to Arkansas River plus storage change in Ruedi Reservoir. 27/ (Inflow record as computed by U. S. Bureau of Reclamation.) 28/ Storage change in Taylor, Blue Mesa and Morrow Point reservoirs. 29/ Storage change in Fontenelle Reservoir. 30/ Storage change in Flaming Gorge Reservoir.

31/ Plus diversion through Duchesne Tunnel. 32/ Storage change in Moon Lake Reservoir. 33/ Storage change in Scofield Reservoir. 34/ Storage change in Joe's Valley Reservoir. 35/ Storage change in Navajo Reservoir. 36/ Plus U. P. & L. Co. tailrace and Logan, Hyde Park and Smithfield canals. 37/ Minus diversions thru Duchesne Tunnel and Weber-Provo Canal. 38/ Storage change in Lake Tahoe and Boca reservoirs (Forecast by Truckee Basin Committee.) 39/ Storage change in Bridgeport Reservoir. 40/ Corrected for major upstream impairments -- represents simulated natural flow conditions.

41/ Storage change in Priest Lake. 42/ Storage change in Coeur d'Alene Lake and diversions by Spokane Valley Farms Co. and Rathrum Prairie canals. 43/ Storage change in Lake Chelan. 44/ Storage change in Jackson Lake. 45/ Storage change in Jackson Lake and Palisade reservoirs. 46/ Storage change in Jackson Lake, Palisades, Island Park, Henry's Lake, Grassy Lake plus diversions between Heise and Blackfoot. 47/ Storage change in Henry's Lake and Island Park reservoirs. 48/ Storage change in MacKay Reservoir and diversion in Sharp Ditch. 49/ Combined flow Big Wood near Bellevue and Camas Creek near Blaine. 50/ Storage change in Arrowrock, Anderson Ranch and Lucky Peak reservoirs.

51/ Storage change in Wild Horse Reservoir. 52/ Storage change in Cascade and Deadwood reservoirs. 53/ Storage change in Keechelus, Kachess and CleElum reservoirs plus diversion by Kittitas Canal. 54/ Changes indicated in (52/) plus storage change in Bumping and Rimrock Lakes plus diversion by Roza, Union Gap, New Reservation, Old Reservation and Sunrise canals. 55/ Storage change in Bumping and Rimrock lakes and diversions by Tieton, Selah Valley, Wapatox canals and City of Yakima. 56/ Storage change in Merwin, Yale and Swift reservoirs. 57/ Storage change in Mayfield Reservoir.

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